Rost Lake, Oconto County, Wisconsin

Fisheries Survey Report, 2016

Waterbody Identification Code: 504300

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SUMMARY

Lake and location
Rost Lake, Oconto County, T30N R19E Sections 23, 24, 25, and 26. Located in the town of Brazeau.

Physical/chemical attributes

Surface acres:	99 acres
Maximum depth:	29 feet
Lake type:	seepage
Water chemistry:	medium hard water, slight alkalinity, clear
Littoral substrate:	muck and sand; limited gravel
Shoreline:	1.57 miles
Aquatic vegetation:	Dominant vegetation (2016 survey by WDNR Water Resources staff) includes *Chara* spp (Muskgrass), *Najas flexilis* (Slender naiad), *Vallisneria americana* (wild celery), and *Potamogeton* spp (Large-leaf and Variable pondweed).
Aquatic invasives:	Chinese mystery snail, *Phragmites*

Purpose of surveys
Baseline lake survey Tier I assessment

Dates of fieldwork
Fyke netting survey conducted March 28, 2016 through April 7, 2016. Electrofishing survey conducted May 23, 2016.

Fishery
Largemouth bass, northern pike, bluegill, black crappie, rock bass, yellow perch, pumpkinseed, warmouth, walleye, and yellow bullhead are present.

Acknowledgements
Data collection for the 2016 survey was completed by WDNR fisheries staff Ronald Rhode, Tammie Paoli, Brad Ryan, and Ben Ewoldt. Fish aging and data entry was completed by Ronald Rhode.

BACKGROUND

Rost Lake is a medium-hard water seepage lake with an area of 99 acres and a maximum depth of 29 feet. The littoral area is primarily sand and muck with limited gravel. There are two public access locations but only one is used as a boat landing (Figure 1). These access locations are owned and maintained by the Town of Brazeau. The majority of the 1.57 miles of shoreline is developed as homes and seasonal cottages, but some undeveloped wetland shoreline exists on the north and south ends. A total of 67 piers were counted on a recent aerial photo, averaging one dock for every 124 feet of shoreline. The Rost Lake Advancement Association is a non-governmental group that is active in the lake community.

Current fishing regulations follow the general inland regulations. State and private fish stocking history from 1972 to 2016 is summarized in Table 1. Fisheries surveys conducted from 1962 to 2016 are shown in Table 2.

METHODS

Six standard 3' x 6' hoop fyke nets with ¾" bar, 1 ½" stretch mesh were set at ice-out on March 28, 2016. A seventh net was set on March 29, 2016 in an area that was still iced over on the previous day (Figure 1). Nets were lifted daily from March 29 through April 7, except for Sunday, April 3, 2016. Total effort was 69 net nights. All fish captured were identified to species and measured to the nearest 0.1 inch. All gamefish were given a top caudal fin clip (for mark recapture population estimate). Scales and/or anal fin rays (northern pike) or dorsal spines (walleye, bass) were collected from 5 gamefish per 0.5 inch group. Scales were collected from five panfish per 0.5 inch group per species.
A WDNR standard direct current double anode electrofishing boat was used to sample the entire shoreline on the evening of May 23, 2016. All fish were collected for the entire shoreline, measured to the nearest 0.1 inch and gamefish were inspected for a top caudal fin clip.

RESULTS

Water temperature at the start of the spring netting survey was 43F and had dropped to 40F when the nets were removed nine days later. A total of 603 fish (including recaptures) of nine different species were collected throughout the survey period (Table 3). Catch per gear type is shown for each species sampled (Tables 4 and 5). Bluegill, northern pike, yellow bullhead, largemouth bass, and black crappie were common. Other species captured include pumpkinseed, warmouth, yellow perch, and walleye.

Bluegill

Bluegill were the most abundant panfish species captured, with a total of 240 sampled. The catch rate was 2.8/net night and 31/mile for electrofishing (Tables 4 and 5). Average length was 7.3 inches with a range from 3.3 to 9.3 inches (Figure 2). Size structure is very good, with 37% being 8 inches or greater. There was good representation of several age classes. The oldest bluegill, estimated at 9 years old, was 9.1 inches. The growth rate of bluegills is slightly above the northeast Wisconsin average and is similar to the 1998 survey (Figure 3).

Black Crappie

A total of 63 black crappie were sampled. The catch rate was 0.7/net night and 11/mile for electrofishing (Tables 4 and 5). The average length was 8.5 inches with a range from 7.2 to 10.9 inches (Figure 4). Ages

4, 5, and 6 comprised the majority of the sample. The mean length at age shows that black crappie in Rost Lake are growing slower compared to other populations in northeast Wisconsin (Figure 5).

Northern Pike

Northern pike were the dominant predator species captured, with a total of 127 sampled including 13 recaptured individuals. The catch rate for spring fyke netting was 1.9/net night (Table 4) compared to 6.4/net night in 1998. Average length was 15.3 inches with a range from 10.9 to 38.7 inches (Figure 6). Size structure was poor with only 3% of the fish greater than 21 inches and the population was dominated by ages 2, 3 and 4. Northern pike growth rates were below the northeast Wisconsin average (Figure 7). It should be noted that scales were used to calculate the northeast Wisconsin averages and the 1998 survey while anal fin rays were used for the 2016 survey. Accuracy of age interpretation is somewhat higher with anal fin rays, particularly for older pike. The population estimate for northern pike was 376 adults (3.8 per acre), with a 95% confidence range between 226 and 664 fish. This estimate is considered a moderate population density for pike. In comparison, the 1998 population estimate for northern pike was estimated at 500 adults.

Largemouth Bass

A total of 69 largemouth bass were sampled, including one recaptured individual. The catch rate for spring fyke netting was 0.1/net night and 38/mile for electrofishing (Tables 4 and 5). Average length of largemouth bass was 10.8 inches with a range from 6.5 to 18.1 inches. The size structure was poor, with only five bass over the 14 inch size minimum (Figure 8). No legal bass were seen in the 1998 survey. It takes approximately 8 years for a largemouth bass to reach 14 inches in Rost Lake. Growth rates are considerably slower compared to northeast Wisconsin averages (Figure 9). There appears to be steady recruitment of largemouth bass, with ages 3-8 being represented.

Other Species

Other species captured include yellow bullhead (75 total), pumpkinseed (20 total), warmouth (5 total), and yellow perch (3 total). One 22 inch male walleye was captured. It was estimated at 14 years old using a dorsal spine cross section. The origin of this single walleye is unknown, as the last stocking record for walleye was in 1993.

DISCUSSION AND RECOMMENDATIONS

Rost Lake is fairly developed, but some areas of natural shoreline exist. Native aquatic vegetation such as wild celery and muskgrass present in the lake provide good habitat, particularly for spawning northern pike. Eurasian water milfoil and curly leaf pondweed have not been found in the lake, so the fishery has not been impacted by those invasive species.

Overall, fewer numbers of fish species were captured in 2016 compared to 1998. The cold spring temperatures during the 2016 survey likely contributed to the low catches. Ideally, water temperatures would rise slowly throughout the netting survey. Instead, water temperatures fell a few degrees from the beginning of the survey at ice out to the end of the survey nine days later. However, similar proportions of fish species were captured in 1998 and 2016. Overall, Rost Lake survey results were similar for both years with quality fast-growing bluegill, small slow-growing northern pike, and small slow-growing largemouth bass being the dominant species.

I recommend continuing to manage the lake for panfish, pike, and bass. Rost Lake supports a quality bluegill fishery. The 1998 survey by Ross Langhurst noted that the bluegill size structure was

exceptional. Size structure in 2016 continues to be good, with 37% being 8 inches or greater. Additional fish habitat could be gained by the placement of large woody debris ("fish sticks") along shorelines that have deep enough water for tree tops to be mostly under water. If there is adequate local support, a regulation change for largemouth bass from the current 14 inch minimum, 5 fish per day to a no minimum, 5 fish per day regulation may be pursued. This regulation change may help to reduce competition and increase growth rates of bass as well as provide some additional harvest opportunities as there are very few legal size bass in the lake. However, the regulation change would only improve bass size structure and overall health of the fishery if anglers were willing to harvest small bass.

The next comprehensive survey for Rost Lake is scheduled for 2026.

Table 1.—Stocking history of Rost Lake from 1972 to 2016.

Year	Species	Strain	Age Class	Number Stocked	Avg Length	Source
1974	Northern pike	Unspecified	Yearling	400	15	Federal Hatchery
1975	Northern pike	Unspecified	Yearling	400	--	Federal Hatchery
1993	Walleye	Unspecified	Yearling	500	8	Private Hatchery

Table 2. – WDNR fisheries surveys completed on Rost Lake from 1962 to 2016.

Date	Survey Type	Effort	Primary survey purpose
May 23, 2016	Electrofishing	1.6 miles	Gamefish/panfish assessment (SEII)
March 28-April 7, 2016	Fyke net	69 net nights	Gamefish population estimate & panfish assessment
April 30, 1998	Electrofishing	1.6 miles	Gamefish/panfish assessment
April 2-10, 1998	Fyke net	54 net nights	Gamefish/panfish population estimate & assessment
October 18, 1993	Electrofishing	1.6 miles	Gamefish/panfish assessment
June 20, 1984	Electrofishing	1.6 miles	Gamefish/panfish assessment
July 12, 1962	Electrofishing	1.6 miles	Gamefish/panfish assessment

Table 3. – Total number, percent of total, average length, and length range of fish species captured with all gear types in 1998 and 2016 in Rost Lake. Numbers include recaptured individuals.

	1998				2016			
*COMMON NAME OF FISH	NUMBER	PERCENT	AVERAGE LENGTH	LENGTH RANGE (inches)	NUMBER	PERCENT	AVERAGE LENGTH	LENGTH RANGE (inches)
Black Crappie	102	7.0%	8.4	5.2 - 13.0	63	10.4%	8.5	7.2 - 10.9
Bluegill	670	45.7%	7.4	2.8 - 11.0	240	39.8%	7.3	3.3 - 9.3
Largemouth Bass	221	15.1%	11.1	7.8 - 14.3	69	11.4%	10.8	6.5 - 18.1
Northern Pike	347	23.7%	15.1	8.8 - 26.5	127	21.1%	15.3	10.9 - 38.7
Pumpkinseed	8	0.5%	6.7	5.2 - 7.4	20	3.3%	6.1	4.9 - 7.7
Rock Bass	3	0.2%	8.3	7.0 - 10.0	0	0.0%		
Walleye	30	2.0%	16.5	14.7 - 27.5	1	0.2%	22.0	
Warmouth	15	1.0%	5.9	5.0 - 7.1	5	0.8%	5.5	5.4 - 6.2
Yellow Bullhead	69	4.7%	10.5	6.7-12.5	75	12.4%	10.3	7.7-13.1
Yellow Perch	0	0.0%			3	0.5%	6.2	5.8 - 6.6
White Sucker	2	0.1%			0	0.0%		
Total	**1,467**	**100.0%**			**603**	**100.0%**		

Table 4. – Catch summary for spring fyke netting in 1998 and 2016 in Rost Lake. Totals include recaptured individuals.

	2016 Spring Fyke Netting (69 net nights)		**1998 Spring Fyke Netting** (54 net nights)	
	Total Catch	Catch per net night	Total Catch	Catch per net night
Black Crappie	45	0.7	100	1.9
Bluegill	191	2.8	610	11.3
Largemouth Bass	8	0.1	53	1.0
Northern Pike	128	1.9	345	6.4
Pumpkinseed	1	0.0	6	0.1
Rock Bass	0	0.0	3	0.1
Walleye	1	0.0	26	0.5
Yellow Perch	3	0.0	0	0.0
Bullhead Sp.	54	0.8	69	1.3
White Sucker	0	0.0	2	0.0

Table 5. – Catch summary for electrofishing surveys in Rost Lake in 1998 and 2016. Totals include recaptured individuals.

	2016 Spring Electrofishing[a] 23-May-2016		1998 Spring Electrofishing[b] 30-Apr-1998	
	Total Catch	Catch per mile	Total Catch	Catch per mile
Black Crappie	18	11.3	2	2.0
Bluegill	49	30.6	60	60.0
Largemouth Bass	61	38.1	168	105.0
Pumpkinseed	19	11.9	2	2.0
Walleye	0	0.0	3	1.9

[a]All gamefish and panfish collected for entire 1.6 miles shoreline.

[b]Gamefish collected for entire 1.6 miles shoreline and all panfish collected for 1 mile shoreline.

Figure 1. Locations of 7 fyke nets on Rost Lake, Oconto County, 2016.

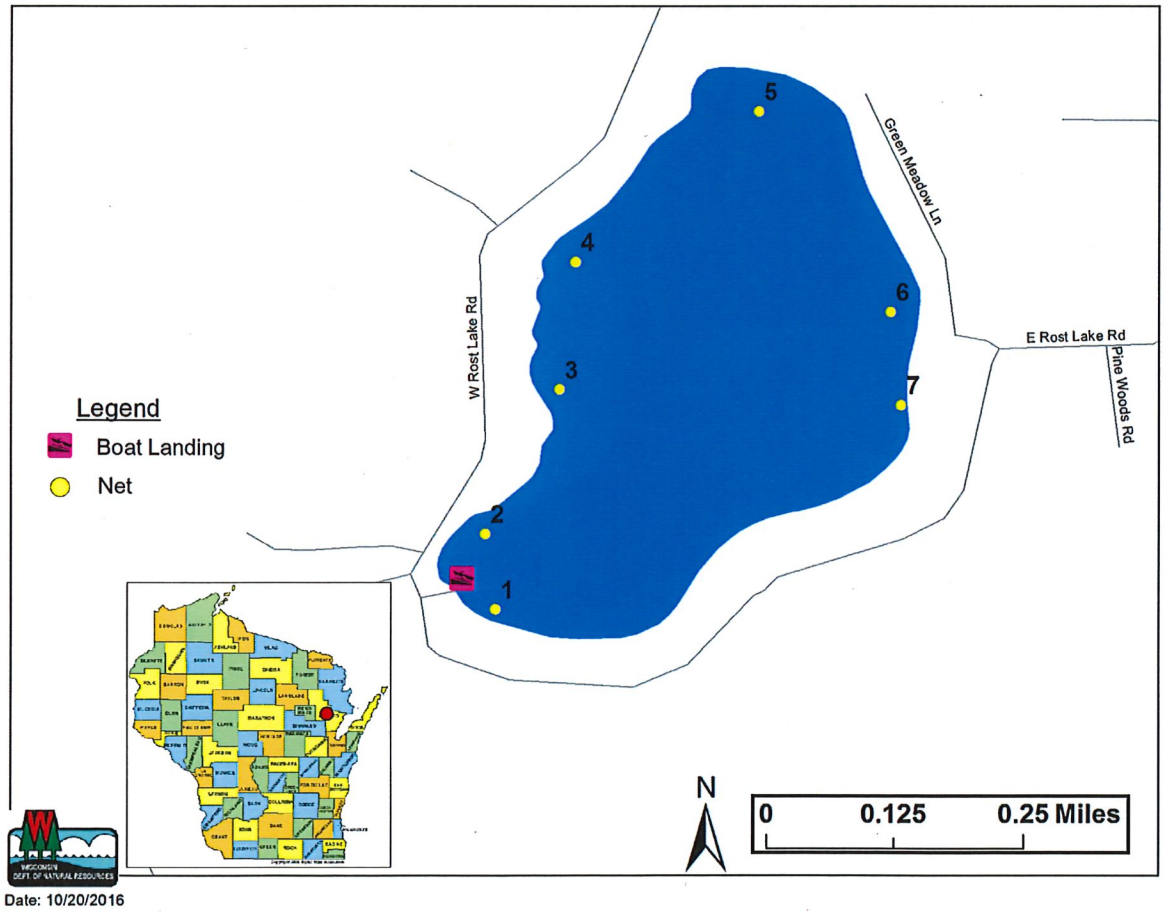


Figure 2. – Bluegill length frequency distribution from Rost Lake fyke net surveys, 1998 and 2016.

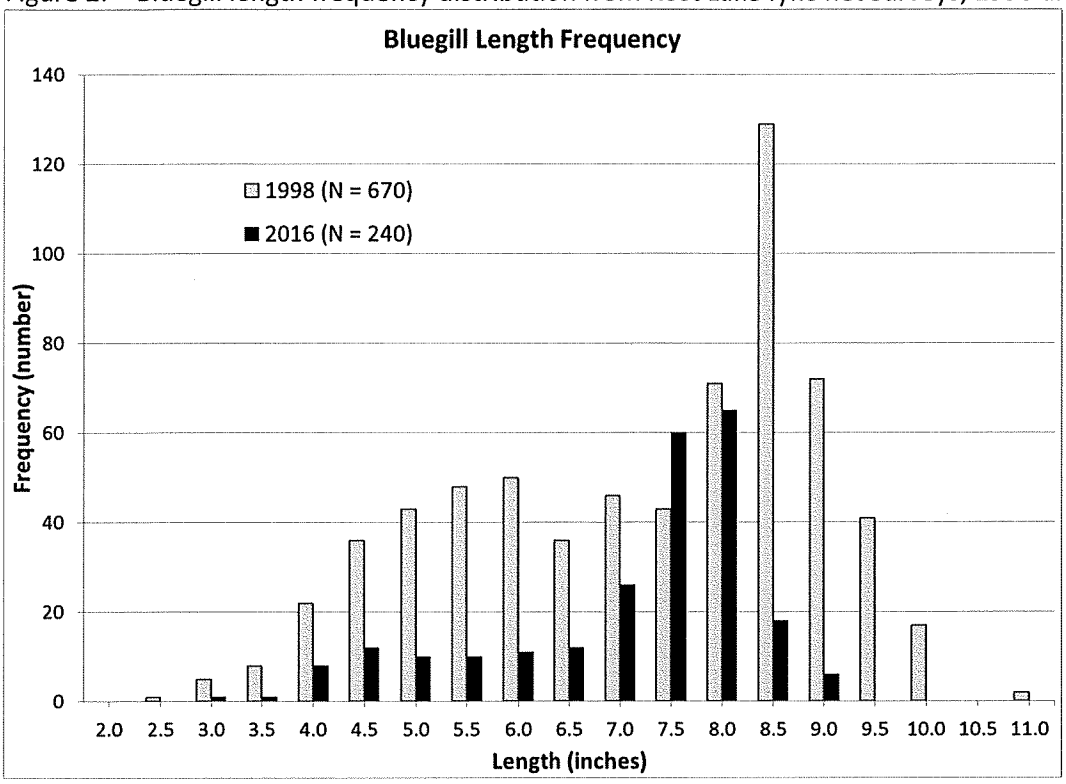


Figure 3. – Bluegill mean length at age, Rost Lake, 1998 and 2016, compared to northeast Wisconsin averages.

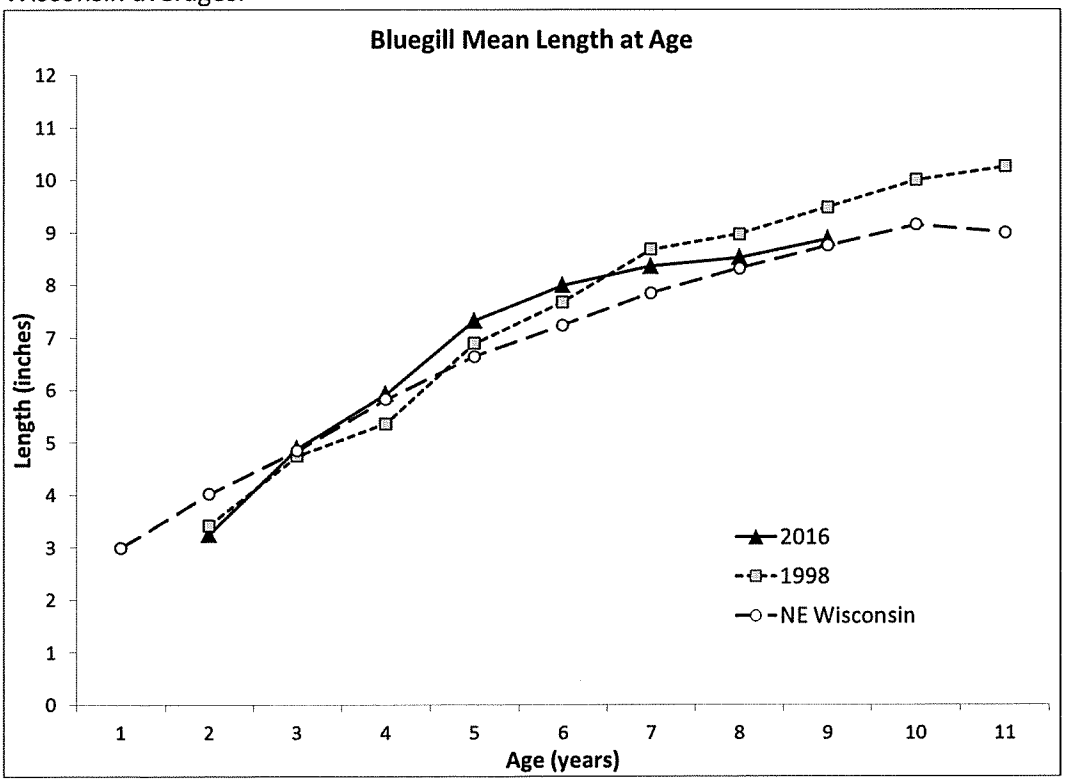


Figure 4. – Black crappie length frequency distribution from Rost Lake fyke net surveys, 1998 and 2016.

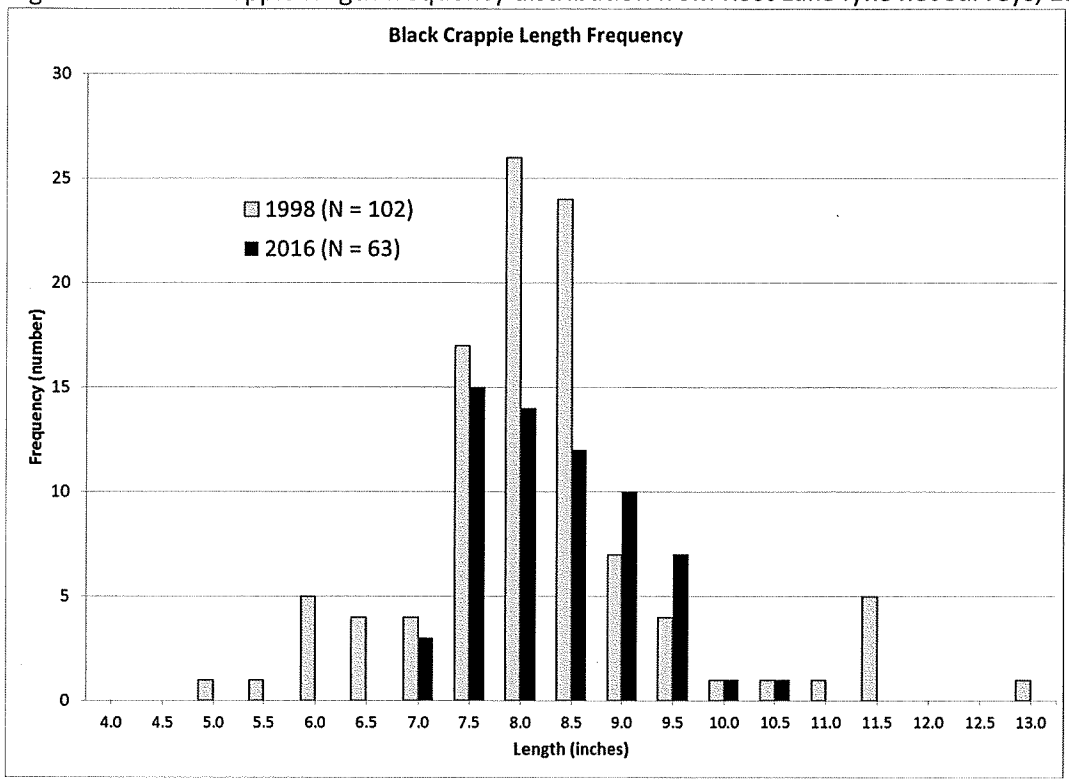


Figure 5. – Black crappie mean length at age, Rost Lake, 1998 and 2016, compared to northeast Wisconsin averages.

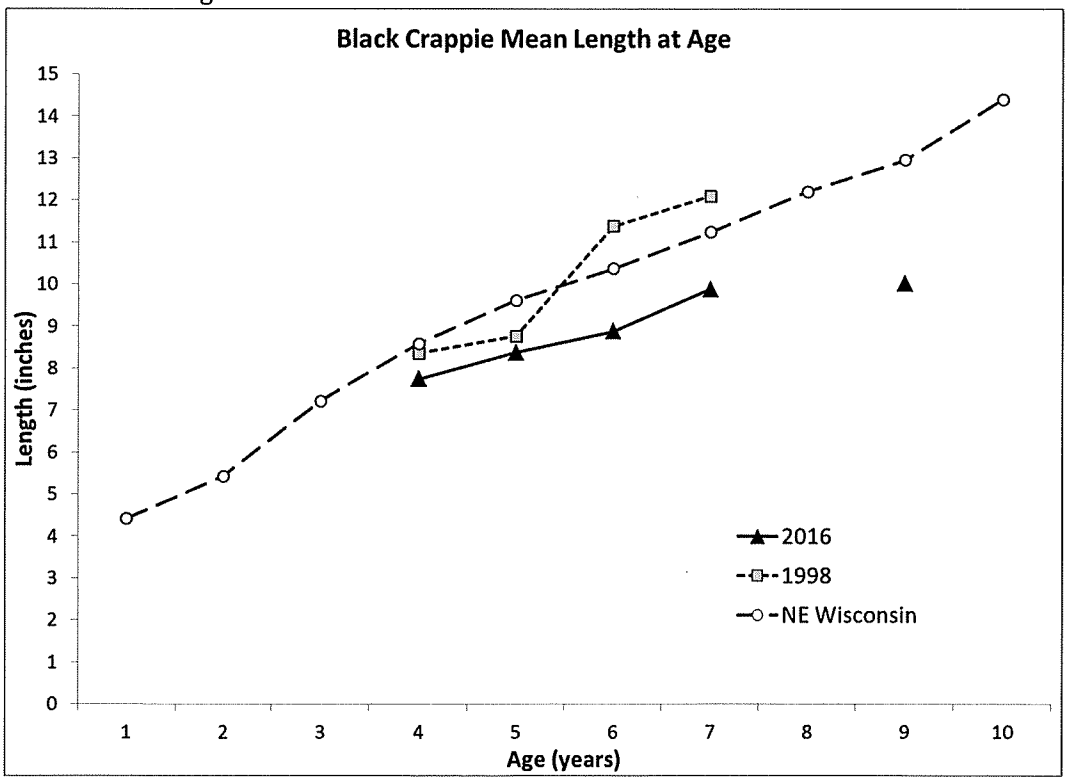


Figure 6. – Northern pike length frequency distribution from Rost Lake fyke net surveys, 1998 and 2016.

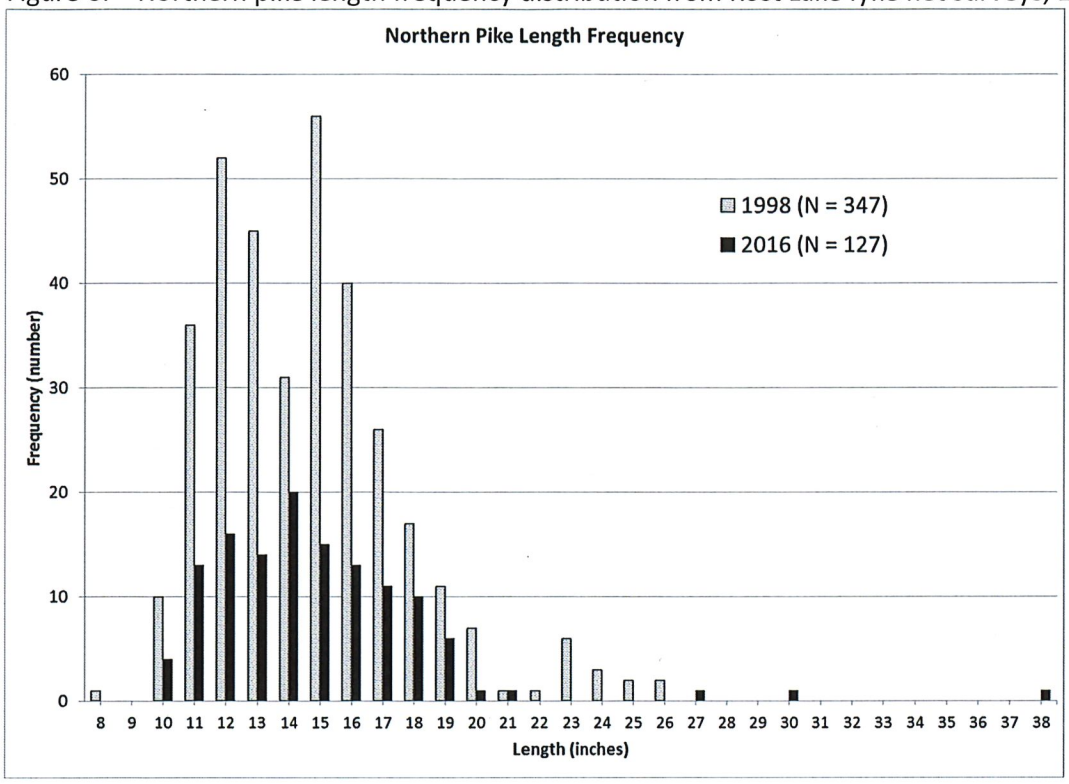


Figure 7. – Northern pike mean length at age, Rost Lake, 1998 and 2016, compared to northeast Wisconsin averages.

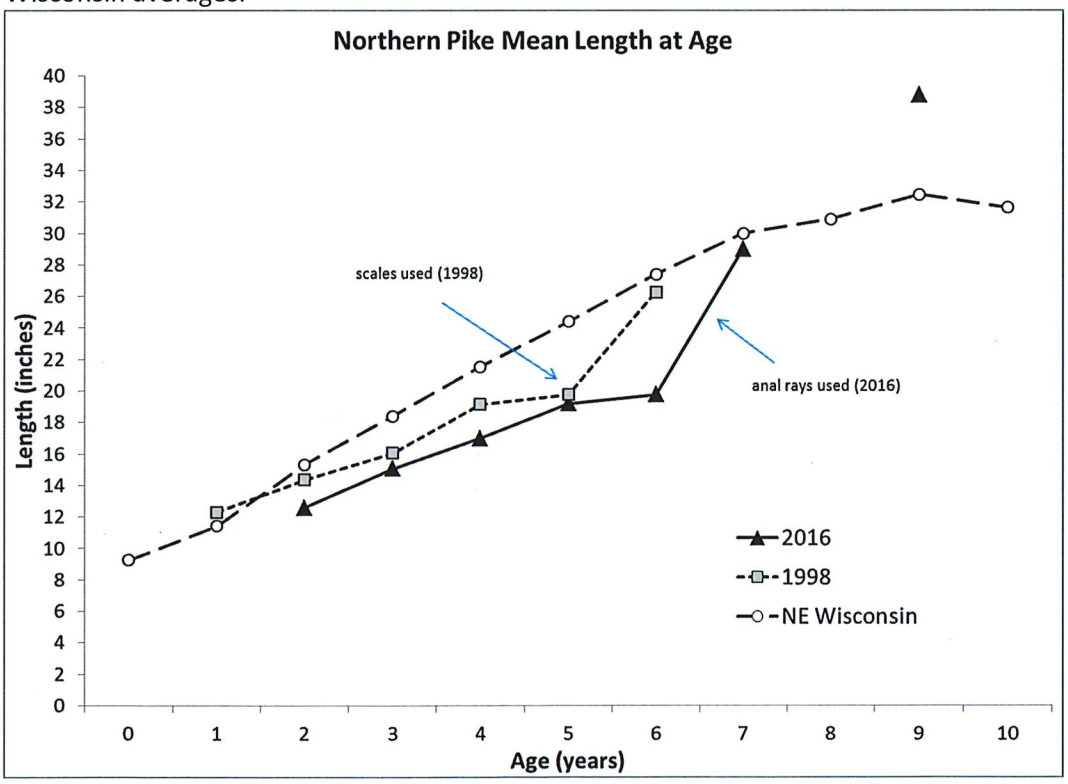


Figure 8. – Largemouth bass length frequency distribution from Rost Lake fyke net surveys, 1998 and 2016.

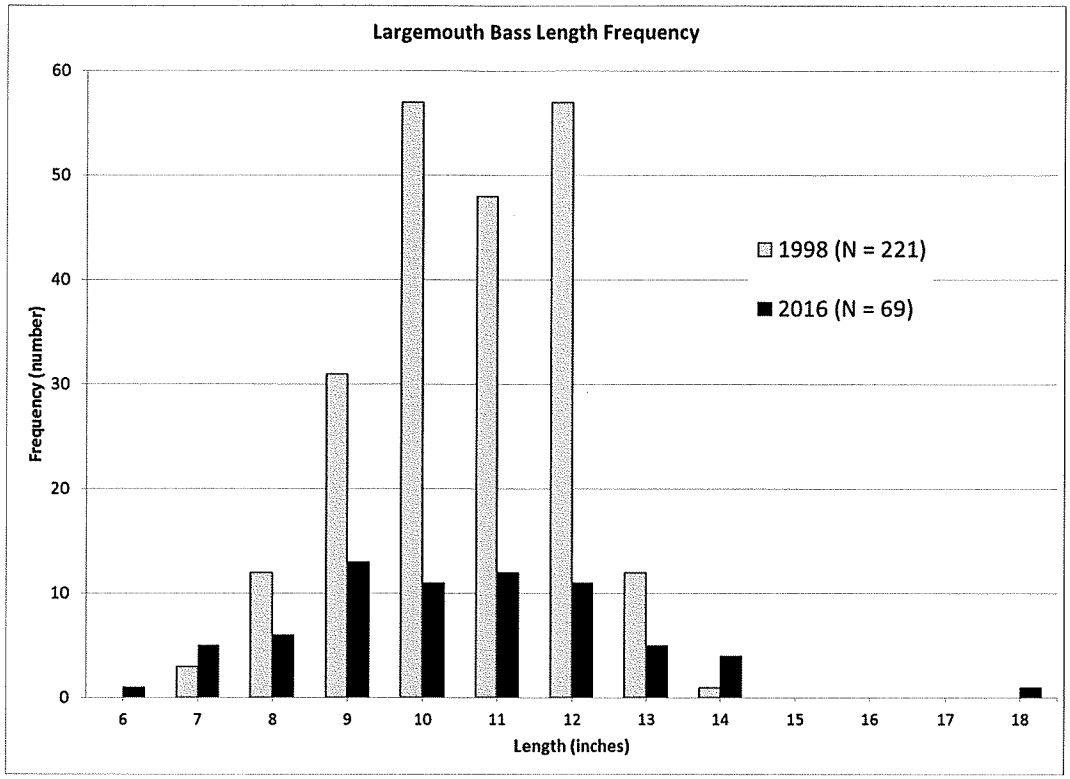
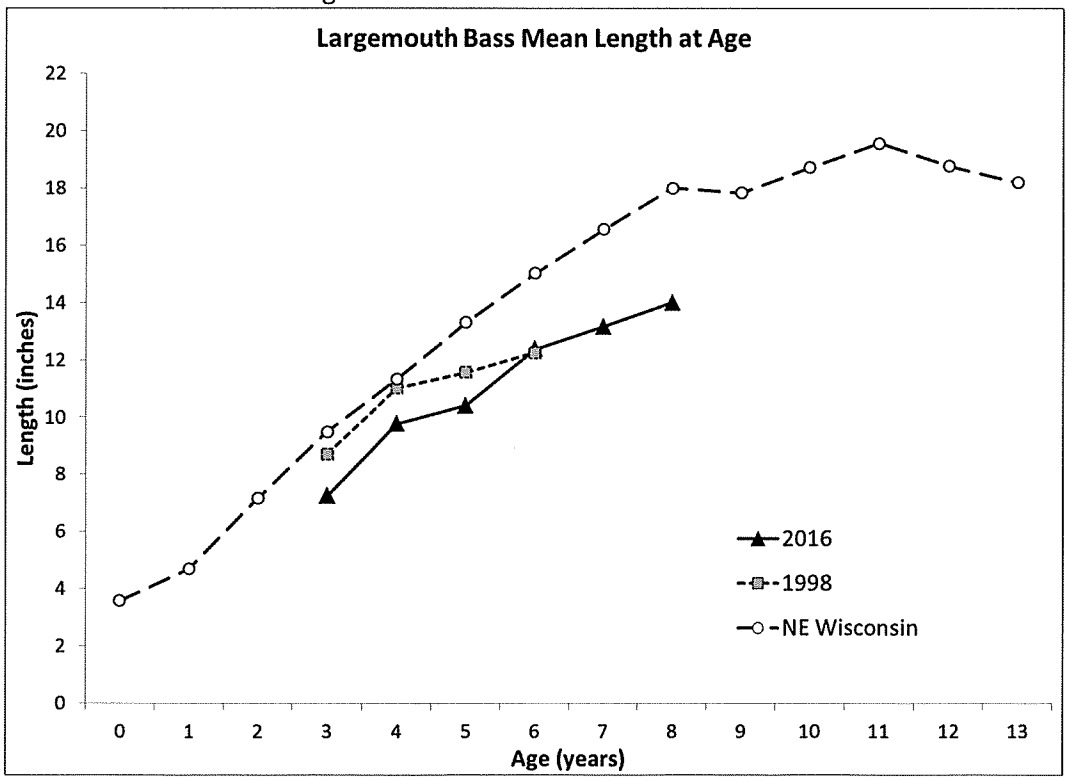


Figure 9. – Largemouth bass mean length at age, Rost Lake, 1998 and 2016, compared to northeast Wisconsin averages.



Appendix – Photos

Rost Lake shoreline with developed homes, cottages, and vegetation along the shoreline. Photo taken October 2012.

Setting nets on March 28, 2016 for the ice out fyke netting survey.

A fyke net set in Rost Lake.

A 9.1 inch bluegill from Rost Lake, estimated at 8 years old.

Ron Rhode holds a 38.7 inch northern pike from Rost Lake, estimated at 9 years old.